DOCKET NO. D-1999-038-4

DELAWARE RIVER BASIN COMMISSION

Johnson Matthey Inc.
Industrial Wastewater Treatment Plant
Upper Merion Township, Montgomery County, Pennsylvania

PROCEEDINGS

This docket is issued in response to an Application submitted to the Delaware River Basin Commission (DRBC or Commission) by IES Engineers on behalf of Johnson Matthey Inc. (JMI or docket holder) on March 27, 2015 (Application) for renewal of an industrial wastewater treatment plant (IWTP) and its discharge. The Pennsylvania Department of Environmental Protection (PADEP) issued National Pollutant Discharge Elimination System (NPDES) Permit No. PA0050377 A-2 for this project on March 15, 2011, amended on March 4, 2014.

The Application was reviewed for approval under Section 3.8 of the *Delaware River Basin Compact*. The Montgomery County Planning Commission has been notified of pending action. A public hearing on this project was held by the DRBC on August 10, 2016.

A. DESCRIPTION

1. **Purpose**. The purpose of this docket is to renew the approval of the docket holder's existing 0.08 mgd IWTP. This docket also continues a total dissolved solids (TDS) determination consisting of IWTP effluent limits of 20,000 mg/l (monthly average) and 40,000 mg/l (daily maximum). No modifications to the existing IWTP are proposed.

2. **Location**. The JMI facility and its IWTP are located on River Road in Upper Merion Township, Montgomery County, Pennsylvania, at the site of the former Alan Wood Steel Company. The IWTP will continue to discharge to the Schuylkill River via the Matsunk Creek culvert at River Mile 92.47 – 21.5 (Delaware River – Schuylkill River).

The project outfall is located in the Schuylkill River Watershed as follows:

OUTFALL NO.	LATITUDE (N)	LONGITUDE (W)
001	40° 05' 08"	75° 19' 20"

3. Area Served. The docket holder is a toll manufacturer of fine organic chemicals that are used as intermediates and/or active ingredients in pharmaceutical products made off-site. The docket holder's IWTP will continue to treat wastewater generated by the manufacturing facility and related support activities located on-site.

For the purpose of defining the Area Served, Section B (Type of Discharge) and D (Service Area) of the docket holder's Application are incorporated herein by reference, to the extent consistent with all other conditions contained in the DECISION Section of this docket.

4. Physical features.

a. Design criteria. The docket holder's existing 0.08 mgd IWTP treats wastewater generated by their manufacturing and related support activities located on-site. The IWTP utilizes advanced treatment designed to meet U.S. Environmental Protection Agency (US EPA) standards of Best Available Technology (BAT) for the pharmaceutical industry as required in 40 CFR 439, Pharmaceutical Manufacturing Point Source Category, Subpart C, Chemical Synthesis Products.

b. Facilities. The existing IWTP consists of several advanced treatment processes to treat various waste streams and to meet the BAT requirements for the pharmaceutical industry. The facilities include eight equalization/pH adjustment tanks, two (2) sequencing batch reactors (SBRs), a steam stripping unit, an evaporator, an incinerator, two (2) chemical treatment tanks, a final clarifier, a sludge clarifier/dewatering unit, three (3) holding tanks, and a sludge storage tank.

The facility generates wastewater with elevated levels of TDS, which is a result of the plant's air pollution control train, liquid hazardous waste incinerator, pH neutralization systems, and manufacturing processes. The pH adjustment tanks generate TDS through the production of soluble salts during the neutralization process. The air pollution control equipment scrubbers also produce salts during neutralization of acid and/or base exhaust gases.

The docket holder replaced an existing sand filter with a compressible media filter in 2015.

Prior facilities and processes for the WWTP have been described in the following DRBC Dockets:

DOCKET NO.	DATE APPROVED BY DRBC
D-1987-034-1	September 22, 1987
D-1999-038-1	December 8, 1999
D-1999-038-2	May 10, 2007

D-1999-038-3	May 11, 2011

Several of the existing IWTP facilities are located in proximity of the flood hazard area (FEMA-designated 100-year flood zone) as defined in the Section 6.1.2 C. of the Commission's *Flood Plain Regulations* (FPR). The docket holder provided information in the Application that none of the IWTP processes are located in the 100-year flood zone.

Wasted sludge will continue to be dewatered on-site, and then hauled off-site by a licensed hauler for disposal at a state approved facility.

c. **Water withdrawals**. The potable water supply in the project service area is provided by groundwater wells owned and operated by Aqua Pennsylvania. The groundwater withdrawal is described in detail in Docket No. D-1965-110 CP, which was approved on October 7, 1965. Sanitary wastewater is discharged to the Upper Merion Municipal Utilities Authority wastewater treatment plant, which was approved by the DRBC via Docket No. D-2001-029 CP-1 on September 13, 2001.

d. **NPDES Permit / DRBC Docket**. The NPDES Permit No. PA0050377 A-2 for this facility was approved by PADEP on March 15, 2011, amended on March 4, 2014 includes final effluent limitations for the project discharge of 0.08 mgd to surface waters classified by the PADEP as Warm Water Fishery (WWF). The following average monthly effluent limits are among those listed in the NPDES permit and meet or are more stringent than the effluent requirements of the DRBC.

EFFLUENT TABLE A-1: DRBC Parameters Included in NPDES permit for Outfall 001

OUTFALL 001 (Schuylkill River)		
PARAMETER	**LIMIT**	**MONITORING**
pH (Standard Units)	6 to 9 at all times	As required by NPDES permit
Total Suspended Solids (TSS)	30 mg/l	As required by NPDES permit
BOD (5-Day at 20° C) Effluent	700 mg/l (85% minimum removal*)	As required by NPDES permit
BOD (5-Day at 20° C) Influent	Monitor & Report*	As required by NPDES permit
Ammonia Nitrogen (3-1 to 10-31) (11-1 to 2-28)	20 mg/l 29.4 mg/l	As required by NPDES permit
Total Dissolved Solids**	20,000 mg/l (monthly average) 40,000 mg/l (daily maximum)	As required by NPDES permit
Temperature	110 ° F (Max)	As required by NPDES permit
Color (Platinum-Cobalt Scale)	100 units	As required by NPDES permit

* See FINDINGS section

** See Condition II.q. in Decision section

B. FINDINGS

The docket holder submitted an Application to renew the approval of their existing 0.08 mgd IWTP and its discharge. The Application also included requests to 1) continue a TDS determination consisting of IWTP effluent limits of 20,000 mg/l (monthly average) and 40,000 mg/l (daily maximum) and 2) modify the calculation method for meeting the 5-day biological oxygen demand at 20˚C (BOD_5) 85% minimum percent removal requirement. No modifications to the IWTP are proposed.

Ammonia and BOD_5 Effluent Limit Background

The project IWTP was originally approved by the DRBC via Docket No. D-1987-034-1 on September 22, 1987 for SmithKline Chemicals. Docket No. D-1987-034-1 approved a 0.06 mgd IWTP and included ammonia effluent limits of 20 mg/l (March through October) and 50 mg/l (November through February). Docket No. D-1987-034-1 also included BOD_5 effluent limits of 1,020 mg/l (March through October) and 900 mg/l (November through February. The docket also provided a 20 mg/l summer ammonia limit based on Best Available Technology (BAT); however, due to biological nitrification being less effective in the winter, the IWTP would be unable to meet the 20 mg/l ammonia limit in the winter and thus the docket approved a less restrictive 50 mg/l winter ammonia limit. The docket went on to explain that in order to offset a higher in-stream oxygen demand due to less restrictive winter ammonia limits, the IWTP discharge was being held to more restrictive BOD_5 limits of 900 mg/l for the winter months.

DRBC Docket No. D-1999-038-1, issued to the new IWTP owner Lonza, Inc on December 8, 1999, provided for the expansion of the WWTP from 0.06 mgd to 0.08 mgd, and continued the above seasonal ammonia and BOD_5 effluent limits. However, in a letter dated November 22, 1999 from the DRBC Executive Director (E.D.) to Sohan Garg of the PADEP, the E.D. recommended more restrictive ammonia and BOD_5 effluent limits in order to account for the expansion of the IWTP. The recommendation by the E.D. included a winter ammonia limit of 29.4 mg/l and to continue the summer ammonia limit of 20 mg/l. Also, the recommendation included a year-round BOD_5 limit of 700 mg/l. The letter states that the docket holder agreed to the more restrictive limits, and recommended that the NPDES permit be modified to reflect the amended limits, with the amended limits to go into effect September 21, 2001 through the NPDES permit expiration.

On May 10, 2007, DRBC Docket No. D-1999-038-2 was approved and included the above recommended effluent limits for ammonia (20 mg/l, March through October; and 29.4 mg/l November through February) and BOD_5 (700 mg/l). These limits (See Effluent Table A-1) are continued in this docket.

Biological Oxygen Demand (BOD5) Calculation Method Determination

The docket holder's March 27, 2015 IWTP renewal Application included a request to modify the docket to reflect the calculation method for demonstrating compliance with the 85% minimum removal requirement for BOD_5 under low level conditions. The calculation method is specified in Section C.I.E. of the current NPDES permit (No. PA0050377 A-2). Section 4.30.B.3. of the DRBC *Water Quality Regulations* (WQR) similarly allows for the 85% BOD_5 removal requirement to be modified upon application, as follows:

> "*For dilute industrial process wastewater, the percent BOD reduction may be modified, upon application, provided it has been demonstrated that the best management practices and the highest degree of waste treatment determined to be practicable will be applied."*

The docket holder has demonstrated that the conditions of this requirement are met and therefore the allowance for demonstrating compliance with the 85% minimum removal requirement by using the calculation method included in the NPDES permit is granted via this docket. EFFLUENT TABLE A-1 requires the docket holder to submit BOD_5 influent and effluent monitoring to the Commission.

Total Suspended Solids (TSS) Effluent Limit Determination

The project IWTP was originally approved by the DRBC via Docket No. D-1987-034-1 on September 22, 1987. Docket No. D-1987-034-1 approved a 0.06 mgd IWTP and included a TSS removal rate requirement of 85%. Docket No. D-1999-038-1 continued the previous TSS removal rate requirement of 85% and added a concentration limit for TSS of 100 mg/l. Docket No. D-1999-038-2 continued the 85% removal rate requirement and 100 mg/l concentration limit for TSS.

The docket holder submitted an Application for renewal of the IWTP on July 1, 2010. Included in the Application was a request from the docket holder to either 1) delete the 85% removal rate requirement; or 2) only apply the 85% removal requirement when the IWTP received influent greater than 100 mg/l. This request was made based on the IWTP's inability to meet 85% removal rate at when the TSS of the influent is low.

Section 3.10.4.D.1.a. of the WQR include a basin-wide effluent limit for TSS of 30 mg/l as a 30-day average and 45-mg/l as a 7-day average. Section 3.10.4 D. 1. a. 2) allows for IWTPs discharging TSS concentrations greater than the 30 mg/l (30-day avg) and 45 mg/l (7-day avg) to discharge up to 100 mg/l if the IWTP also meets 85% removal rate.

The docket holder submitted TSS effluent monitoring data for the IWTP discharges from August 2008 to October 2010. The average monthly TSS effluent concentrations ranged

between 3.0 mg/l and 14.5 mg/l. From a review of this data, it appears that the IWTP discharges are well below the 30 mg/l basin-wide TSS limit and can meet the 30 mg/l as a 30-day average. In consideration of the operational data the prior approved TSS docket reduces the TSS effluent limit of 100 mg/l is not justified. This docket includes a TSS effluent limit of 30 mg/l in accordance with the WQR. Based on the low influent TSS levels this docket does not include a requirement for a minimum of 85% removal of the influent TSS. See Effluent Table A-1 in Section A.4.d. of this docket.

TDS Effluent Limit Determination

Section 3.10.4.D.2 of the WQR states:

"Total dissolved solids shall not exceed 1000 mg/l, or a concentration established by the Commission which is compatible with designated water uses and stream quality objectives, and recognizes the need for reserve capacity to serve future dischargers."

The Commission's basin-wide in-stream TDS criteria is that the receiving stream's resultant TDS concentration be less than 133% of the background (WQR Section 3.10.3.B.1.b.) and the receiving stream's resultant TDS concentration be less than 500 mg/l (WQR Section 3.10.3.B. 2.). The discharge is required to comply with the more stringent of the above in-stream criteria. The 133% of the background TDS requirement is for the protection of aquatic life. The 500 mg/l TDS requirement is to protect the use of the receiving stream as a drinking water source. The EPA's Safe Drinking Water Act secondary standard for TDS is 500 mg/l.

High TDS in the IWTP effluent is generated from the plant's air pollution control train, liquid hazardous waste incinerator, pH neutralization systems, and manufacturing processes. DRBC staff performed several evaluations of the IWTP discharging greater than 1,000 mg/l effluent TDS to evaluate compliance with the Commission's basin-wide in-stream TDS criteria.

TDS Determination Background

Docket No. D-1987-034-1, approved by the DRBC on September 22, 1987, was for the original project IWTP with a design flow rate of 0.06 mgd. This docket included a TDS effluent limit of 17,500 mg/l for the IWTP. Docket No. D-1999-038-1 approved an expansion to the project IWTP from 0.06 mgd to 0.08 mgd, and continued the previous TDS effluent limit of 17,500 mg/l. Docket No. D-1999-038-2 approved an increase in the TDS effluent limit from 17,500 mg/l to 20,000 mg/l as a monthly average and 40,000 mg/l as a daily maximum.

DRBC staff performed TDS determination evaluations during the review of Docket Nos. D-1999-038-2 & D-1999-038-3 and estimated the background TDS concentration of the Schuylkill River at the IWTP discharge location as 480 mg/l. 133% of 480 mg/l is 638 mg/l;

therefore, during the previous evaluation, the in-stream requirement of 500 mg/l was deemed to be the more stringent of the two Commission in-stream criteria.

The Q_{7-10} flow in the Schuylkill River at the IWTP outfall was estimated during the previous evaluations as 300 cfs (194 mgd). Based on the background TDS concentration in the Schuylkill River of 480 mg/l, the previous dockets determined that the TDS would be raised to 488 mg/l by an IWTP effluent TDS concentration of 20,000 mg/l (average monthly). The previous evaluations determined that TDS would be raised to 496 mg/l by an IWTP effluent TDS concentration of 40,000 mg/l (daily maximum).

Updated TDS Determination

DRBC Staff performed a TDS determination evaluation as part of the review the docket holder's Application for the current docket (D-1999-038-4). The requested IWTP effluent limits and Q_{7-10} flow of the Schuylkill River did not change from the evaluation of Docket No. D-1999-038-3; however, the estimated background Schuylkill River in-stream TDS concentration was updated based on available data from two (2) sources: 1) the United States Geological Survey (USGS) National Water Information System (NWIS) and 2) the US EPA's STORET database. Based on the available data, the estimated background TDS concentration in the Schuylkill River upstream of the IWTP outfall is 351 mg/l. 133% of 351 mg/l is 467 mg/l; therefore, the DRBC in-stream requirement of 133% of background is the more stringent of the two (2) Commission in-stream requirements.

Based on the estimated background TDS concentration in the Schuylkill River of 351 mg/l, the Q_{7-10} flow of the Schuylkill River of 194 mgd, the IWTP hydraulic design capacity of 0.08 mgd with an effluent TDS concentration of 40,000 mg/l daily maximum, the TDS in the Schuylkill River would be raised to 367 mg/l during Q_{7-10} flows. If there was a discharge from the WWTP under these conditions, the WWTP flow would raise background TDS to 105 %.

Although the discharge exceeds DRBC's basin-wide TDS effluent limit of 1,000 mg/l, DRBC staff determined the discharge to be compatible with the Commission's designated water uses and water quality objectives in conformance with DRBC Water Quality Regulations since the in-stream concentrations in the Schuylkill River are not expected to exceed the US EPA's Safe Drinking Water Act's secondary standard for TDS is 500 mg/l nor exceed the Commission's criteria of 133% of background as a result of the IWTP discharge. Therefore, the 20,000 mg/l (monthly average) and 40,000 mg/l (daily maximum) effluent limit for Outfall 001 approved in Docket No. D-1999-038-3 is continued via this docket.

In-stream TDS Monitoring

The docket holder was required to submit an in-stream TDS monitoring work plan and implement the work plan as part of the previous docket approval (D-1999-038-3). The docket

holder submitted the work plan and the results of the monitoring. After the results of the monitoring have been evaluated, DRBC Staff will determine if further in-stream monitoring is required.

Near the project site, the Schuylkill River has an estimated seven-day low flow with a recurrence interval of ten years (Q7-10) of 194 mgd (300 cfs). The ratio of this low flow to the average design waste water discharge from the IWTP is 2,425 to 1.

The nearest surface water intake of record for public water supply downstream of the project discharge is operated by the City of Philadelphia Water Department (PWD). PWD's Queen Lane intake is located on the Schuylkill River, approximately nine river miles downstream.

The project does not conflict with the Comprehensive Plan and is designed to prevent substantial adverse impact on the water resources related environment, while sustaining the current and future water uses and development of the water resources of the Basin.

The effluent limits in the NPDES Permit are in compliance with Commission effluent quality requirements, where applicable.

The project is designed to produce a discharge meeting the effluent requirements as set forth in the Commission's WQR.

C. DECISION

I. Effective on the approval date for Docket No. D-1999-038-4 below, the project described in Docket D-1999-087-3 is terminated and replaced by Docket No. D-1999-038-4 to the extent that it is not included in Docket No. D-1999-038-4.

II. The project and appurtenant facilities as described in the Section A "Physical features" of this docket are approved pursuant to Section 3.8 of the *Compact*, subject to the following conditions:

a. Docket approval is subject to all conditions, requirements, and limitations imposed by the PADEP in its NPDES permit, and such conditions, requirements, and limitations are incorporated herein, unless they are less stringent than the Commission's.

b. The facility and operational records shall be available at all times for inspection by the DRBC.

c. The facility shall be operated at all times to comply with the requirements of the Commission's *WQR* and *Flood Plain Regulations* (*FPR*).

d. The docket holder shall comply with the requirements contained in the EFFLUENT TABLE in Section A.4.d. of this docket. The docket holder shall submit the required monitoring results electronically to the DRBC Project Review Section via email **aemr@drbc.state.nj.us** on the **Annual Effluent Monitoring Report Form** located at this web address: http://www.state.nj.us/drbc/programs/project/pr/info.html. The monitoring results shall be submitted annually, absent any observed limit violations, by January 31. If a DRBC effluent limit is violated, the docket holder shall submit the result(s) to the DRBC within 30 days of the violation(s) and provide a written explanation that states the action(s) the docket holder has taken to correct the violation(s) and protect against any future violations.

e. Except as otherwise authorized by this docket, if the docket holder seeks relief from any limitation based upon a DRBC water quality standard or minimum treatment requirement, the docket holder shall apply for approval from the Executive Director or for a docket revision in accordance with Section 3.8 of the *Compact* and the *Rules of Practice and Procedure*.

f. If at any time the receiving treatment facilities prove unable to produce an effluent that is consistent with the requirements of this docket approval, no further connections shall be permitted until the deficiency is remedied.

g. Nothing herein shall be construed to exempt the docket holder from obtaining all necessary permits and/or approvals from other State, Federal or local government agencies having jurisdiction over this project.

h. The docket holder is permitted to treat and discharge wastewaters as set forth in the Area Served Section of this docket, which incorporates by reference Sections B (Type of Discharge) and D (Service Area) of the docket holder's Application to the extent consistent with all other conditions of this DECISION Section.

i. The docket holder shall discharge wastewater in such a manner as to avoid injury or damage to fish or wildlife and shall avoid any injury to public or private property.

j. No sewer service connections shall be made to newly constructed premises with plumbing fixtures and fittings that do not comply with water conservation performance standards contained in Resolution No. 88-2 (Revision 2).

k. Nothing in this docket approval shall be construed as limiting the authority of DRBC to adopt and apply charges or other fees to this discharge or project.

l. The issuance of this docket approval shall not create any private or proprietary rights in the waters of the Basin, and the Commission reserves the right to amend,

suspend or rescind the docket for cause, in order to ensure proper control, use and management of the water resources of the Basin.

m. Unless the docket holder requests an extension that is approved by the Commission in advance, in accordance with paragraph 11 of the Commission's Project Review Fee schedule (Resolution No. 2009-2), the docket holder is responsible for timely submittal of a docket renewal application on the appropriate DRBC application form at least 12 months in advance of the docket expiration date set forth below. The docket holder will be subject to late charges in the event of untimely submittal of its renewal application, whether or not DRBC issues a reminder notice in advance of the deadline or the docket holder receives such notice. In the event that a timely and complete application for renewal has been submitted and the DRBC is unable, through no fault of the docket holder, to reissue the docket before the expiration date below (or the later date established by an extension that has been timely requested and approved), the terms and conditions of the current docket will remain fully effective and enforceable against the docket holder pending the grant or denial of the application for docket approval.

n. The Executive Director may modify or suspend this approval or any condition thereof, or require mitigating measures pending additional review, if in the Executive Director's judgment such modification or suspension is required to protect the water resources of the Basin.

o. Any person who objects to a docket decision by the Commission may request a hearing in accordance with Article 6 of the Rules of Practice and Procedure. In accordance with Section 15.1(p) of the Delaware River Basin Compact, cases and controversies arising under the Compact are reviewable in the United States district courts.

p. The docket holder may request of the Executive Director in writing the substitution of specific conductance for TDS. The request should include information that supports the effluent specific correlation between TDS and specific conductance. Upon review, the Executive Director may modify the docket to allow the substitution of specific conductance for TDS monitoring.

q. The docket holder is prohibited from treating/pre-treating any hydraulic fracturing wastewater from sources in or out of the Basin at this time. Should the docket holder wish to treat/pre-treat hydraulic fracturing wastewater in the future, the docket holder will need to first apply to the Commission to renew this docket and be issued a revised docket allowing such treatment and an expanded service area. Failure to obtain this approval prior to treatment/pre-treatment will result in action by the Commission.

BY THE COMMISSION

DATE APPROVED: September 14, 2016

EXPIRATION DATE: March 31, 2021